Chauvinism in Science

GOTTFRIED SCHATZ
Biozentrum, University of Basel, CH-4056 Basel, Switzerland
(Fax, 41-61-7112448; Email, schatz@ubaclu.unibas.ch)

Is Science chauvinistic? It is not, but scientists often are. How does chauvinism in Science manifest itself? Could it be that we are genetically programmed to reject those we see as "foreign"?

Somewhere in the eastern United States, I am told, there is a nondescript building from which the government monitors the world's telephone conversations. I find it hard to believe that this can be done, but knowledgeable friends assure me that today's computers can indeed pierce the global gibberish, pick out keywords presaging danger, and track their source.

Our brain is not nearly as powerful yet it, too, monitors the conversations around us. Certain words, or the way they are said, can trigger an internal alarm that alerts us to someone to watch out for, or move away from. Each of us has different alarm settings. They reveal the blueprint of our soul. That's why I try to keep mine a secret. But for the purpose of this article I shall divulge one of them: chauvinists.

The term "chauvinism" eternizes the inflated patriotism of Nicolas Chauvin of Rochefort, one of Napoleon's soldiers. True patriotism, however, is a far cry from chauvinism. A patriot loves his own country; a chauvinist hates everyone else's. Where there is chauvinism, racism is usually not far behind. These two are soul brothers who travel in pairs. Chauvinism is racism wearing a tuxedo.

The wiring for my alarm circuits was installed by the Austrian Nazi schools I attended until I was nine years old. They taught me that the British were arrogant bullies, the Americans ignorant weaklings, the French sneaky cowards, the Gypsies dirt, and the Jews worse than that. This valuable education came to me free of charge, five days a week, rain or shine. By a child's osmosis, I assimilated the Nazi's vocabulary, the cadence of their speech, even their gait. But they must have garbled some wires because their circuits that were supposed to make me a good Nazi did exactly the opposite. Today, more than half a century later, I can still sniff out most fascists from a hundred yards against the wind. You can always rely on a thorough education gone wrong.

Once I learned what had happened, I wanted to give my brain a thorough spring-cleaning. But where was I to find clean water? So many of the intellectual wells of my country were contaminated. History, literature, and art, even music: they had all been polluted by Third Reich ideologies. But the physical sciences had resisted tampering; they had remained immutable and pristine. Even though I was then much too naïve to see this clearly, I intuitively sensed the international flavour of Science and hoped that becoming a scientist would help me escape from my intellectual isolation. In my youthful idealism I saw Science as the white knight, the natural enemy of lie and prejudice. Science would allow me to join ranks with people from totally different cultural backgrounds towards a common goal. I would become part of an intellectual web spanning the globe far above the man-made turbulence of languages and nations. A life in Science would finally mean good riddance to chauvinists.

My road to Science has taken me from chemistry to molecular biology, meandered through many countries, and bestowed upon my family a panoply of passports: my wife is Danish, my son American, one daughter Swiss, the other Austrian, and her husband Russian. A delightful mess, just the thing to make some of my childhood teachers turn in their grave. I have always tried to give my laboratory an international flavour and I savour hearing my students and postdoctoral fellows from around the world converse with each other in the *lingua franca* of Science, Bad English.

I soon discovered, however, that chauvinism also infests science. I saw little of it as a student and postdoctoral fellow, when doing experiments and getting a job were all that mattered. But now, as I often work for international

foundations, scientific organizations, or prize committees, my chauvinist alarm goes off quite regularly.

Chauvinism in our profession comes in many shades and colours. When it is gross and overt, we usually quickly detect and condemn it. But when its tuxedo is expertly tailored, it may go unnoticed and can get out of hand.

Let me now guide you through a scale of the different sounds of chauvinism in Science, starting with obvious examples and finishing with subtle ones. This didactic *decrescendo* might help to illustrate the full dynamic range of the problem and sensitize us to its frequently disregarded *pianissimo* versions.

The first example is *fortissimo* and requires little discussion. At a recent biochemistry meeting for southeast European countries, the delegates from one of these countries refused to attend because they insisted that the meeting should have been held in *their* country. Such boycotts were common fare during the old Stalinist days, but everyone knew that politicians imposed them on the scientists. This time, though, it was the scientists themselves who hoisted the banner of chauvinism. And they did so while their region was embroiled in barbaric warfare of atavistic cruelty.

The next example, a robust *forte*, is just as crude, but probably more common. The scene was the wood-paneled boardroom of a wealthy European foundation that had asked me and several colleagues from around the world for advice on how best to dish out the foundation's fortunes. (If that sounds easy to you, just try it and you will quickly change your mind.) It had been a long day and we were finally free to choose our favourite drink and our favourite colleague (usually in that order), and were settling in to make small talk and let our hair down (to the extent it was still available). The committee chairman had selected me as his favourite colleague and, intending to discuss another country's science policy, treated me to a chauvinistic tirade that made me cringe. Listening to him almost made me believe the second World War was still on. This man runs a major scientific funding agency in his country and who knows what else. May God have mercy on us.

The next example is already down to a *mezzo piano*. The scene was a seminar room at the Biozentrum, my own institution. After the seminar speaker had presented his latest findings, he acknowledged that similar work had also been done by "AB at Yale, CD at Heidelberg, and by a Japanese group". Nobody blinked. Presumably all Japanese are nameless little fellows who work and live in rabbit hutches. We have heard it before.

Now our scale diminishes to a *piano* and assumes a decidedly English timbre. English, the tyrant of today's molecular biology! Creativity does not lend itself to statistics, but it is probably fair to say that three-quarters of the important work in molecular and cell biology now comes out of the United States and Great Britain. Why this is so need not concern us here. What matters is that today's molecular biology is the playground of the English-speaking people, and it is they who set the rules. Some western European countries are honorary club members as long as they act proper and do not speak a Latin language. Israelis are also in, but not Arabs. If you want to succeed in molecular biology, you had better speak decent English, dress the western (preferably American) way, act "cool", and select your literary quotes or jokes from the anglophone repertoire. Preeminence is a fast road to self-importance and chauvinism. The fact that this chauvinism is often subconscious does not mitigate the pain it can inflict on its victims. Let me give you two examples of this Anglophone chauvinism.

Last year, the preliminary programme of a major international congress provoked an uproar because more than 90% of the slated speakers were from the USA or Great Britain. The programme had been drafted by US scientists with impeccable professional and ethical credentials, but it had to be changed hurriedly to forestall an international boycott.

And in the same year, a prominent journal that likes to see itself as international featured a letter from an Asian scientist who bemoaned the fact that the journal solicited the vast majority of its Commentary articles from British or US scientists. The Editor's reply was a model of huffed surprise.

I could go on, but these two examples should do because they are so paradigmatic. Our colleagues from Britain and the USA are rarely aware of these chauvinistic blinkers and usually readily discard them when made aware of their presence. They, too, know that victims of chauvinism have better antennas than chauvinists.

Artists, too, have sensitive antennas and have described examples of scientific chauvinism. In his moving masterpiece "*The little Prince*", Antoine Saint-Exupéry features a Turkish astronomer who tells an international audience that he has discovered a new asteroid. The audience ignores him because of his traditional Turkish garb, but when he presents the same findings a few years later dressed the western way, they are accepted with enthusiasm. "*Grown-ups are really strange*", concludes the little Prince.

Anglophone chauvinism is so omnipresent because of the scientific preeminence of the USA and Great Britain. However, the spirit on which it thrives is certainly not limited to these two countries. We scientists in Continental Europe can be accomplished chauvinists, too. We like to complain about "*the American scientific Mafia*", yet as a group we work less hard than our colleagues across the Atlantic. And neither are we slouches when it comes to concocting nationally biased scientific programmes. A few years ago, a European science agency reprimanded me because I had drawn up a meeting programme in which more than one third of the speakers were from the United States and Great Britain. When I

asked, perhaps a little pointedly "What is the maximum tolerable Anglophone quota?" they backed off.

Chauvinism is a French word, so I must not forget to pay my respects to the French. About two decades ago, my French colleagues were stunned when their government ordered them to give all their lectures in French, even at international meetings. *Quelle bêtise*!

Citation chauvinism, the tendency to ignore work done in other countries, is particularly subtle because it is tricky to prove. This problem has been heatedly discussed for decades, most recently in the editorial of a prominent review journal. Yet its existence is still not generally accepted (Raghuram and Madhavi 1996; Day 1997). No wonder, because we have now reached the *pianissimo* end of our scale. My own experience convinces me that a scientific discovery is more likely to be cited by others if it was made at a prestigious institution, or in one of the leading industrial countries. This form of scientific chauvinism inflicts great injustice and damage on researchers that work at less visible institutions or in disadvantaged countries. Citation chauvinism is so pernicious because its preferred victims are scientists who already have the odds stacked against them (Wayt Gibbs 1995).

Enough. Doing Science obviously does not immunize us against chauvinism. There is, in fact, no reason why it should because doing scientific experiments does not, by itself, make a scientist. To a true scientist, Science is more than a profession, or a way to fame, or the quest for bettering man's future. It is a unique way to see our humanity and the world around us. It is both a yardstick for daily actions and a beacon that tells us where to go.

We scientists are just human beings with the usual failings, so there will always be chauvinistic scientists. Yet these are not the real problem. The real problem is the refusal to acknowledge that scientific chauvinism exists.

My ideal academic community is a sanctuary without intellectual taboos, where everything is open to reasoned and dispassionate discussion. Reality is quite different. There are topics that an untenured assistant professor better avoid at faculty parties, and "chauvinism in Science" is one of them. I have stopped counting how often I got into hot water upon broaching this subject with colleagues. Many of them accused me of being overly sensitive or – chauvinistic.

Such a denial posits that something does not exist because it is not supposed to exist. It is intellectual hypocrisy at its worst, striking at the marrow of the scientific spirit. Science insists that we see things as they are, unclouded by superstition, prejudice, or official dogma. It forbids us to see the emperor's clothes if there are none, and commands us to say so clearly. Science, and particularly biology, has taught us that much of our social behaviour is beholden to primeval reflexes that are etched into our genes and expressed through our biochemical circuits. I am convinced that some of these circuits prompt us to reject people who are different. Such a trait may have served us well in our past as pack hunters, and has simply stuck around, just like our appendix. How could a particular profession deliver us from this genetic appanage?

I wish we knew more about how genetically determined behavioural circuits shape our reaction towards others. This area is still uncharted territory that holds the promise of spectacular discoveries. In the late sixties, tantalizing glimpses of what may be just around the corner have come from the discovery that a few simple chemicals control the social behaviour of some insects (Stowe *et al* 1995). When these insects talk to each other, they use smells rather than sounds. And if they do not like each other's smell, they may try to kill each other.

Our brain is immensely more complex and malleable than that of insects, yet recent findings on the mammalian immune system strongly suggest that even we can be unwitting slaves of our olfactory glands. I shall briefly recount this stupendous discovery because it supports my assertion that chauvinism and racism are not aberrations that can be stamped out, but an integral part of our biological heritage.

We quickly reject tissue grafts from other individuals because our cells are covered by a complex set of glycoproteins that are recognized by matching receptors on foreign cells. Immunologists refer to these glycoproteins as *class I antigens of the major histocompatibility complex* or, in brief, *MHC I* molecules. More than one hundred closely related genes encode these molecules. Studies with mice have revealed that during sexual reproduction, these slightly different genes can combine to specify as many as 3600 million different variants of *MHC I* surface tags. At least the same complexity probably exists for humans. As the world population now stands around 6000 million, each of us (who is not an identical twin) has, on the average, less than one MHC I *Doppelgänger* somewhere on this globe.

But these *MHC I* molecules do more than help reject foreign tissue grafts. They also can shed their plasma membrane anchors, escape into the blood stream, the sweat and the urine, and contribute to the very individual body odour. In mice, this *MHC I*-specific odour determines the selection of a mating partner and aggression towards other mice (Eklund 1998), and there are tantalizing hints that it influences sexual attraction in humans (Wedekind *et al* 1995). It boggles the mind: the same molecules govern recognition of "non-self" by single cells, and complex psychological interactions between human beings! It is an ode to the parsimonious design of life on earth. And it is also a story that sends a shiver down my spine.

Nothing suggests as yet that the odour of *MHC I* glycoproteins contributes to our chauvinistic or racist tendencies. Still, the implication from these studies is clear. Genes can determine how two human beings interact with one another. It would be foolish to negate this fact.

We try to cover our ancient genetic circuits by layers of "culture", and to some extent "cultural silencing" works. In fact, it is our only effective and acceptable defense. Yet it also inculcates our children with preconceptions and prejudices that can make these circuits even more dangerous. As biologists we must face up to the fact that each of us is a Pandora's box whose lid better remain securely fastened. Historians and biologists will agree readily that each specimen of *Homo sapiens* is a disaster waiting to happen.

A radiologist once showed me dark spots in my lungs, unsuccessful attempts by *Mycobacterium tuberculosis* to invade my body when I was a child. My defenses had overwhelmed the intruders and imprisoned them in hardened tombs. But the unwelcome guests are still there, waiting for their chance. It would be foolish to ignore their presence. So I live a healthy life and try to keep them on a tight rein.

Maybe this is also good advice for handling the time bombs the world of my childhood implanted into my brain. No spring-cleaning, however thorough, could ever have removed them all. I do not know where these bombs are, or what they might do should they go off. Looking at the world through a scientist's eye has helped me to encase them in protective shells, but I know that these shells are not perfect. Some limiting pressure will cause them to burst. What is this limiting pressure? Will I be lucky enough never to know? My best bet is to remember that these bombs are there.

Science, like everything humans do, will always struggle with chauvinism. The problem will not go away. On the contrary, it may increase during the next decades as biological discoveries degenerate into money machines and substitutes for national flags. Current efforts to unify European science are proving a disappointingly fertile breeding ground for scientific chauvinism. We will never eliminate the problem, but we must keep it in check. We shall succeed if we admit that the problem exists.

Acknowledgements

I am indebted to Heimo Brunetti, Ernesto Carafoli, Stuart J Edelstein, Sabeeha Merchant, Michael Murphy and Vidyanand Nanjundiah for helpful suggestions.

References

Day M 1997 The price of prejudice; *New Sci.* **156** (No. 2106) 22–23

Eklund A C 1998 Use of the MHC for mate choice in wild house mice (*Mus domesticus*); *Genetica* **104** 245–248

Raghuram N and Madhavi Y 1996 India's declining ranking; *Nature* (*London*) **383** 572

Stowe M K, Turlings T C, Loughrin J H, Lewis W J and Tumlinson J H 1995 The chemistry of eavesdropping, alarm, and deceit; *Proc. Natl. Acad. Sci. USA* **92** 23–28

Wayt Gibbs W 1995 Lost Science in the Third World; *Sci. Am.* **273** (No. 2) 76–83

Wedekind C, Seebeck T, Bettens F and Paepke A J 1995 MHC-dependent mate preferences in humans; *Proc. R. Soc. London Ser. B* **260** 245–249